

ATOMIC ENERGY CENTRAL SCHOOL  
CLASS – VIII PRACTICAL GEOMETRY SUB: MATHEMATICS  
HANDOUT MODULE – 3/3

CONDITION – 4 :

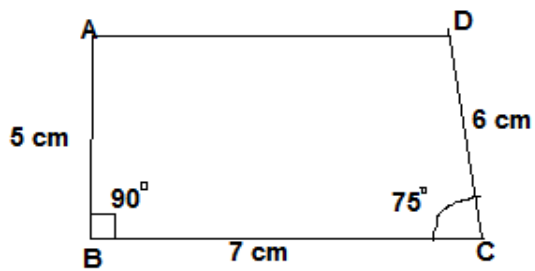
When Three Sides And Two Included Angles Are Given.

EXAMPLE

Construct a Quadrilateral ABCD where

- ▶  $AB = 5 \text{ cm}$
- ▶  $BC = 7 \text{ cm}$
- ▶  $CD = 6 \text{ cm}$
- ▶  $B = 90^\circ$
- ▶  $C = 75^\circ$

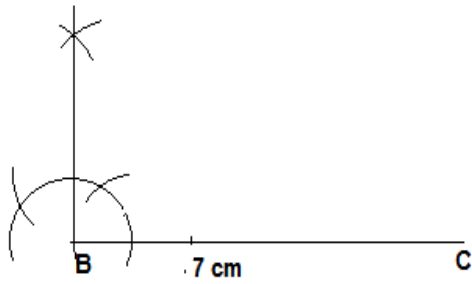
Step – 1 : Draw a rough figure of given Quadrilateral.



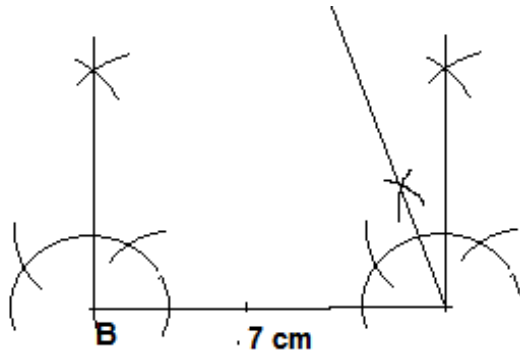
Step – 2 : Draw  $BC = 7 \text{ cm}$  as base



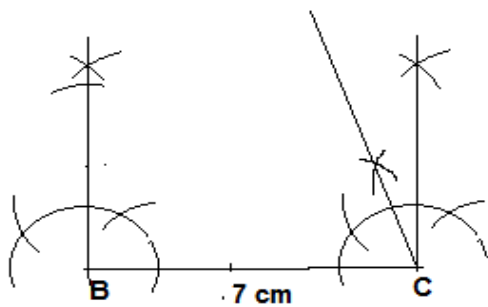
Step – 3 : Draw  $\angle B = 90^\circ$



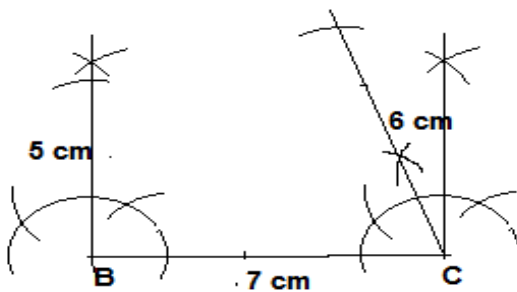
Step – 4 : Draw  $\angle C = 75^\circ$



Step – 5 : Draw  $\angle C = 75^\circ$

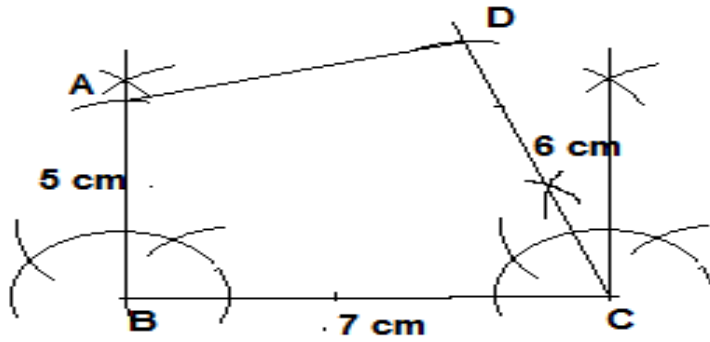


Step – 6 : With B as centre and BA = 5 cm as radius draw an arc  
With C as centre and CD = 6 cm as radius draw an arc



Step – 7 : Join AD

ABCD is the required Quadrilateral

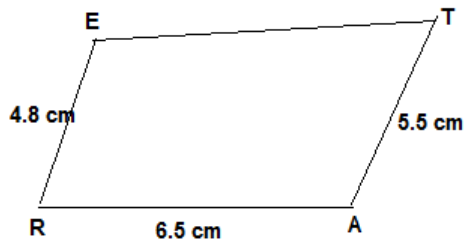


EXAMPLE – 2

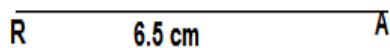
Draw a Quadrilateral RATE where

- ▶  $RA = 6.5 \text{ cm}$ ,
- ▶  $AT = 5.5 \text{ cm}$ ,
- ▶  $RE = 4.8 \text{ cm}$ ,
- ▶  $R = \angle 60^\circ$
- ▶  $A = \angle 120^\circ$

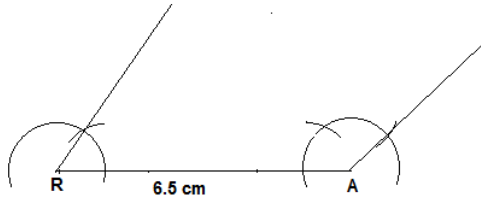
Step – 1 : Draw a rough sketch of the given Quadrilateral RATE



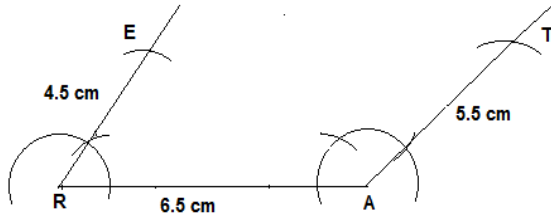
Step – 2 : Draw  $RA = 6.5 \text{ cm}$



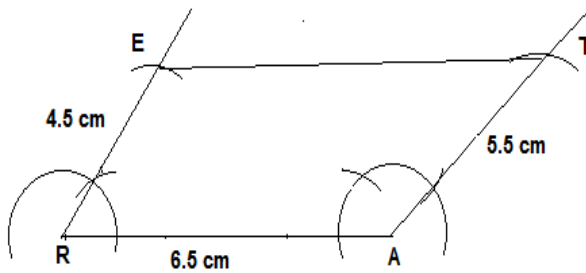
Step – 3 : Draw  $R = \angle 60^\circ$  &  $A = \angle 120^\circ$



Step – 4 : With R as centre and  $RE = 4.5$  cm draw an arc  
 With A as centre and  $AT = 5.5$  cm draw an arc



Step 5 : Join ET  
 RATE is the required Quadrilateral

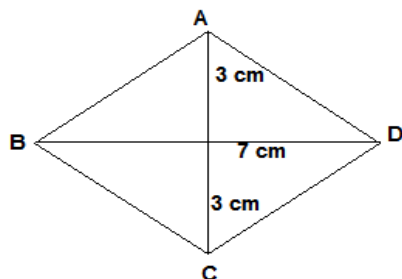


CONDITION – 5 : When Other Special Properties are Known.

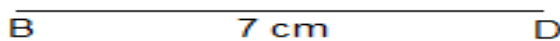
EXAMPLE

- Is it possible to construct a Rhombus ABCD where  $AC = 6$  cm and  $BD = 7$  cm?  
 justify your answer.

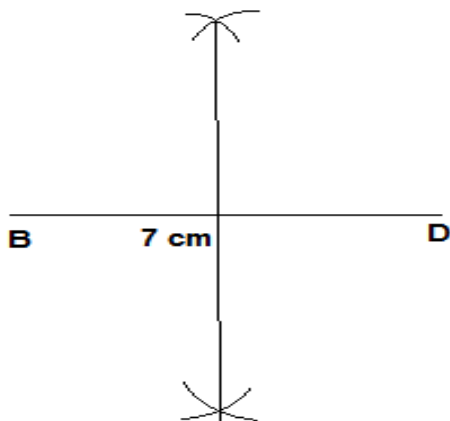
Step – 1 : let us first draw a rough sketch of the given Rhombus ABCD



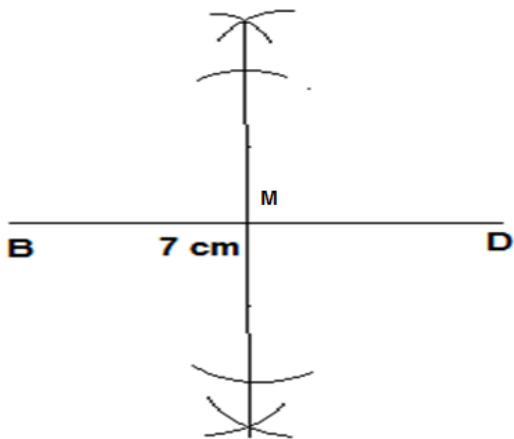
Step -2 : Draw  $BD = 7$  cm



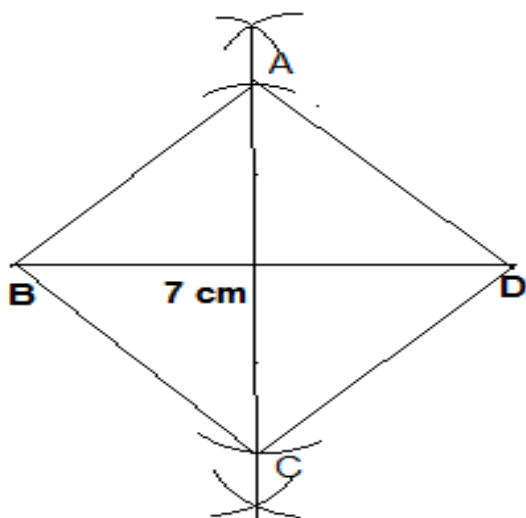
Step – 2 : Draw Perpendicular bisector of BD (In Rhombus, diagonals are perpendicular to each other)



Step – 3 : With M as centre draw an arc of radius 3 cm (above & below) on the perpendicular.



Step – 4 : Join BA, DA, BC & DC.  
ABCD is the required Rhombus.

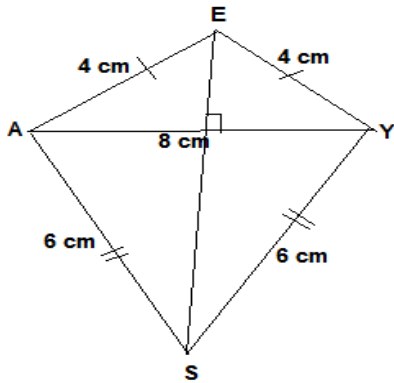


EXAMPLE – 2 :

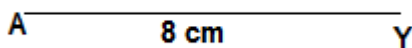
Construct the kite EASY if

- ▶  $AY = 8\text{ cm}$ ,
- ▶  $EY = 4\text{ cm}$  and
- ▶  $SY = 6\text{ cm}$

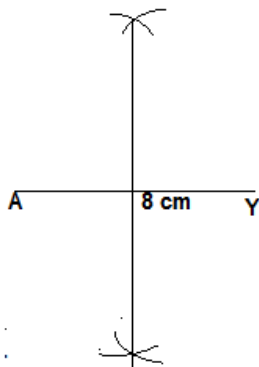
Step – 1 : Draw a rough sketch by using the measurements



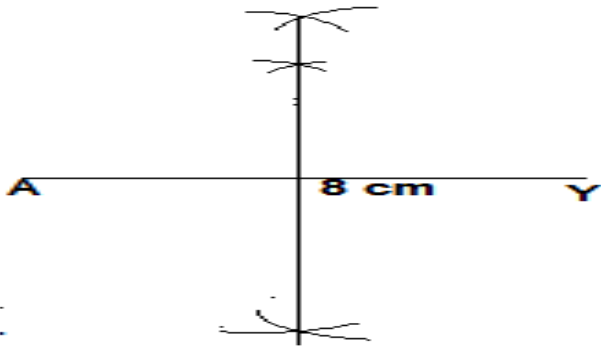
Step – 2 : Draw  $AY = 8\text{ cm}$



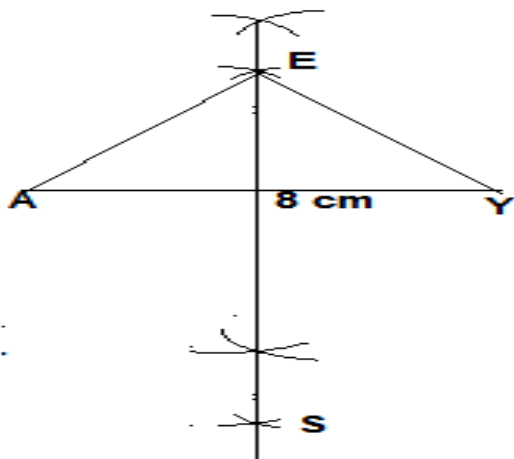
Step – 3 : Draw a perpendicular bisector AY  
( In kite, the diagonals are perpendicular to each other )



Step – 4 : With A as centre draw  $AE = 4\text{ cm}$  on the perpendicular  
With Y as centre draw  $YE = 4\text{ cm}$  on the perpendicular  
(the adjacent sides are equal in kite)



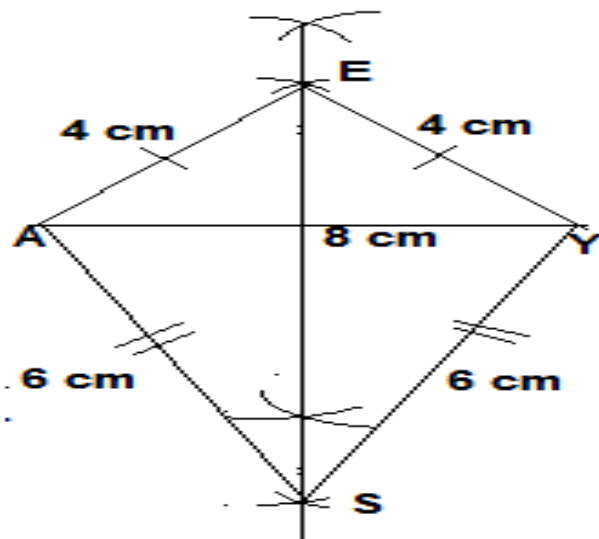
Step – 5 : Join AE & YE



Step – 6 : Draw  $AS = YS = 6\text{ cm}$

Join AS and YS

EASY is the required Kite



## SUMMARY

▶ **CONDITION – 4 :**

When Three Sides And Two Included Angles Are Given

▶ **CONDITION – 5 :**

When Other Special Properties are Known.

- ▶ **Parallelogram :**
  - i) each pair of opposite sides are equal and parallel
  - ii) opposite angles are equal.
  - iii) diagonals are equal.
- ▶ **Rhombus:**
  - i) each pair of opposite sides are equal and parallel
  - ii) all sides are equal.
  - iii) diagonals are perpendicular to each other.
- ▶ **Rectangle :**
  - i) all the properties of parallelogram.
  - ii) each angle is equal to right angle.
  - iii) diagonals are equal
- ▶ **Square :**
  - i) all properties of parallelogram.
  - ii) all sides are equal.
  - iii) diagonals are equal.
- ▶ **Kite :**
  - i) diagonals are perpendicular to each other.
  - ii) one of the diagonals bisect other

## HOME ASSIGNMENT

- ▶ Construct a quadrilateral ABCD, where  $AB = 4$  cm,  $BC = 5$  cm,  $CD = 6.5$  cm, and  $B = \angle 105^\circ$  and  $C = \angle 80^\circ$
- ▶ Construct a quadrilateral DEAR,  $DE = 4$  cm,  $EA = 5$  cm,  $AR = 4.5$  cm,  $E = \angle 60^\circ$   $A = \angle 90^\circ$
- ▶ Construct a Square READ with  $RE = 5.1$  cm.
- ▶ A Rhombus whose diagonals are 5.2 cm and 6.4 cm long.